

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### “Improved Combined Clutch and Expanding Pulley”.

We, ATELIERS DE LA MOTOBECANE, a French body corporate, of 16, rue Lesault, 16 Pantin (Seine) France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to light vehicles, particularly autocycles, provided both with an automatic centrifugal clutch, for causing disconnection of the motor from the transmission when the speed of the vehicle falls below a certain predetermined value, and a variable-speed device, which is likewise automatic, and includes as its essential component an expanding pulley with centrifugal masses, on which a V belt is fitted.

This pulley is, in a known construction, composed of two truncated conical flanges, each acted on by a set of centrifugal balls which engage both against the external wall of the corresponding flange, and also against an outer abutment plate.

The centrifugal clutch comprises, likewise in a known way, a cage which supports the mechanism and which has a positive rotary connection with the rear wheel through the transmission.

These two mechanisms, the clutch and the variable-speed device, are wholly independent from one another, except that they are both mounted on the output shaft of the motor.

Now, and precisely in the particular application to autocycles, the weight and bulk must be reduced to every possible extent, and especially the bulk in lateral direction, since it is important in all cases not to exceed the limiting width defined by the two vertical planes in which turn the cranks of the pedal mechanism which the autocycles in question always include.

The object of the invention is essentially

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to produce a combination of the two mechanisms in question such that its lateral bulk will permit the assembly to be readily placed between the motor and the plane of the corresponding crank.

The introduction of certain parts common to both mechanisms also permits a considerable reduction in weight.

For this purpose, and according to the invention, the abutment plate for the outer set of balls, that is to say those situated further from the motor, is eliminated and replaced by a wall of the cage which forms part of the centrifugal clutch and which supports the mechanism.

Preferably, in the hub of the centrifugal clutch an annular recess is provided, in which can move concentric cylindrical sleeves which guide the two flanges of the expanding pulley axially on the motor shaft in the course of their relative displacements.

The co-operation and interpenetration of the two mechanisms, which are brought about by the invention, appear clearly from the accompanying drawings, which show schematically, in vertical longitudinal section, one embodiment given simply by way of example.

In these drawings:

Figure 1 shows the relative position of the components of the mechanism while the effective diameter of the expanding pulley is a maximum.

Figure 2 shows the same components in the low-speed position.

The part of the motor adjacent to the device made according to the invention is indicated at 1. On the output shaft 2 of the motor are mounted the two truncated conical flanges 3, 4 of the expanding pulley, on which is fitted the V belt 5. The cylindrical sleeve 6 for guiding the flange 3 bears directly on the motor shaft 2. The cylindrical sleeve 7 for the flange 4 bears on the sleeve 6. In a known way, a ball catch

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8 working in notches 9 holds the diameter at which the belt fits the pulley at certain predetermined values. In a way which is likewise known, the flat plate 10 forms an abutment for the balls 11 which are each housed in a small cavity 12, here formed by a simple cylindrical bore at a suitable inclination.

According to the invention, the abutment plate for the outer set of balls 13 is eliminated. It is the wall 14 itself of the cage 15 supporting the mechanism of the centrifugal clutch which fulfils its function. Not only is the bulk of the assembly thus reduced, but also, thanks to this arrangement, a simplification and lightening of the mechanism are brought about.

In the final position of separation of the two flanges 3 and 4, shown in Figure 2, one comes to bear against the plate 10 and the other against the wall 14.

In order to permit the lateral movement of the two flanges 3, 4, which corresponds to an axial movement of their respective supporting sleeves 6 and 7, and according to a further characteristic of the invention, the cage 15 of the centrifugal clutch is provided with a hub 16 centred by the collar 17, and forming around the shaft 2 an annular space in which these two sleeves can move, as a comparison of Figures 1 and 2 shows clearly.

The separate operation of the centrifugal clutch and of the expanding pulley are each known, and need not be recalled here.

It is quite evident that the details of construction of the device made according to the invention can be modified in different

ways, as compared with the example given here simply as an illustration.

What we claim is:—

1. A combination of a centrifugal clutch and the expanding pulley of an automatic variable speed device, the expanding pulley comprising two truncated conical axially movable flanges against which act centrifugal balls, and the clutch comprising a cage carrying the centrifugal mechanism, characterized by the fact that the clutch and the pulley are mounted in juxtaposition on a shaft and a wall of the rotating cage forms the abutment for the centrifugal balls which act against the corresponding flange of the expanding pulley.

2. A combination according to Claim 1, further characterized by the fact that the hub of the centrifugal clutch has an annular recess permitting the axial movement of concentric sleeves for guiding the two movable flanges of the expanding pulley.

3. A combination of a centrifugal clutch and the expanding pulley of an automatic variable speed device substantially as described with reference to the accompanying drawings.

4. An auticycle or other vehicle having a combination according to any of Claims 1 to 3 mounted on the output shaft of a motor, the clutch being further from the motor.

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Fig. 1.

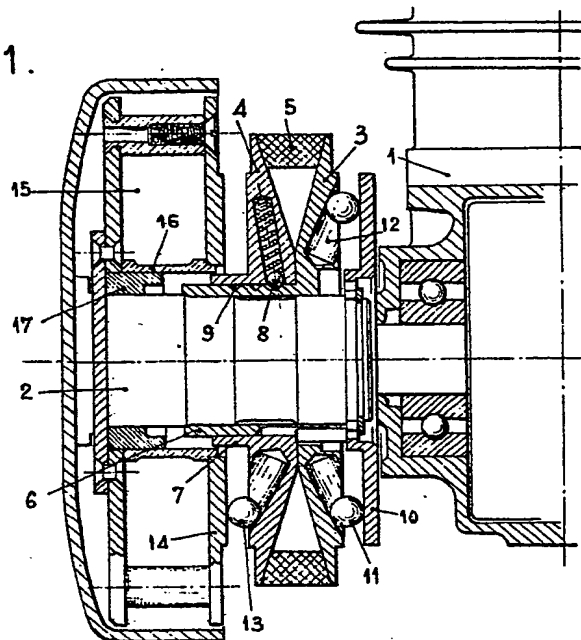
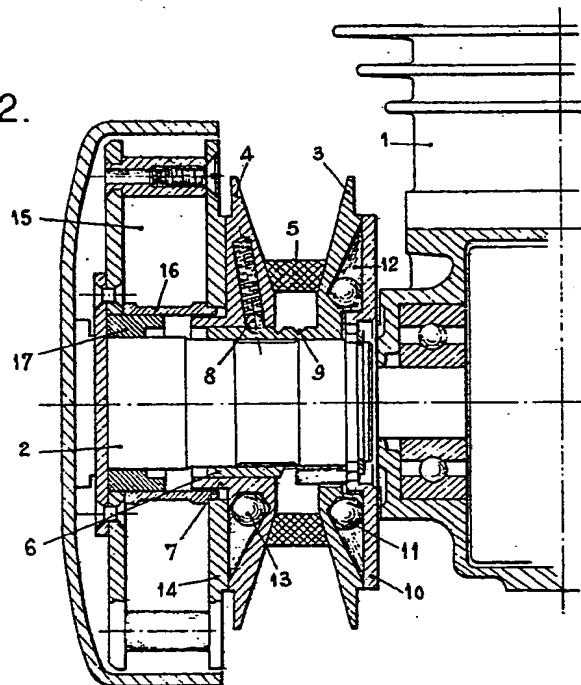


Fig. 2.



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